

AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Page 26, line 1, replace the single word heading CLAIMS: with the following heading:

~~CLAIMS~~ WHAT IS CLAIMED IS:

1-53. (Canceled)

54. (New) An automated planter comprising:

a) at least one extraction device adapted to extract a plant out of a propagation tray;

b) a delivery assembly arranged to receive extracted plants and to deliver the plants to ground;

c) a plant transport arranged to receive extracted plants from the at least one extraction device to present said plants to the delivery assembly, the plant transport comprising:

i) first and a second plant conveyors, each conveyor being adapted to receive extracted plants, and

ii) a control operable to hold one conveyor in a static state to receive the plants from said at least one plant extraction device while the second conveyor is driven to present previously deposited plants to the delivery assembly.

55. (New) A planter in accordance with claim 54, wherein:
the planter comprises n plant extraction devices where n is an integer, and
each conveyor is adapted to receive n extracted plants substantially simultaneously.

56. (New) A planter according to claim 54, wherein the delivery assembly comprises:

two endless belts arranged adjacent one another so as to be able to grip the extracted plants between opposing surfaces of the belts; and

a drive assembly arranged to drive the belts at the same speed and such that their opposing surfaces move in the same direction.

57. (New) A planter according to claim 54, wherein the plant transport is adapted to receive an extracted row of plants from the at least one plant extraction device and to present the extracted plants sequentially to the delivery assembly.

58. (New) A planter according to claim 54, wherein:
the plant transport comprises a plurality of holding ports,
the planter further comprising:

a controller for controlling a position of the holding ports relative to the delivery assembly and

a sensor,

with the controller advancing the plant transport in response to the sensor, such that the delivery assembly receives extracted plants at a uniform rate.

59. (New) A planter according to claim 58, wherein the sensor is adapted to sense plant foliage and the controller is adapted to index the plant transport so that the delivery assembly receives properly developed plants at a uniform rate.

60. (New) A planter according to claim 58, wherein:

the sensor is arranged to detect foliage of the plant being conveyed by the plant transport, the sensor being arranged to provide a signal to the controller;

the controller is further arranged to control a drive assembly of the plant transport whereby, if no foliage or inadequately developed foliage is detected, the plant transport is controlled accordingly to ensure that plants are presented to the delivery assembly at substantially regular intervals.

61. (New) A planter according to claim 54, wherein the at least one extraction device comprises an inserting arrangement for

inserting at least one insertion member into a root portion of a plant to grip the root portion, the at least one extraction device being adapted to approach a row of plants from a direction transverse to the row and to push foliage of each plant to one side before inserting the insertion member, and the at least one extraction device is adapted to pull the plant out of the propagation tray.

62. (New) A planter according to claim 61, wherein the at least one extraction device is adapted to separate a base of a root portion from a top of the propagation tray by a distance of no more than a height of the root portion, the at least one extraction device moving the extracted plant transversely to an upper surface of the propagation tray.

63. (New) A planter according to claim 61, wherein the at least one extraction device is adapted to pull a row of plants simultaneously from the propagation tray.

64. (New) A planter according to claim 54, wherein the at least one extraction device extracts a row of plants in alignment along a line and translates the plants in a direction perpendicular to that line, the at least one extraction device depositing the line of plants in relation to the plant transport.

65. (New) A planter according to claim 54, wherein the planter further comprises:

holding ports to locate and hold the extracted plants; and
extraction members adapted for insertion into a root portion of the plants, the extraction members being driven generally transversely into the root portion of the plants to hold the plants in said holding ports while the at least one extraction device is withdrawn.

66. (New) A planter according to claim 54, wherein the at least one extraction device comprises:

a) fingers which are sprung such that ends of the fingers are biased towards each other,

b) a spacer member located between the fingers,

c) an arrangement for positioning the spacer member and fingers adjacent to an upper surface of a root portion of a plant, and

d) an arrangement for holding the position of the spacer member constant while driving the fingers down past sides of the spacer member.

67. (New) A planter according to claim 54, wherein the at least one extraction device comprises:

a) fingers which are sprung such that ends of the fingers are biased towards each other, and

b) a spacer member located between the fingers, the spacer member being adapted to engage with an upper surface of a root portion of a plant to allow the fingers to be driven down past the sides of the spacer member, whereby the fingers are inserted into the root portion and converge to grip the root portion.

68. (New) A planter according to claim 67, wherein the planter further comprises a stop for limiting movement of the spacer member so as to at least limit compression of a root portion surface by the spacer member.

69. (New) A planter according to claim 67, wherein the spacer member comprises a cut out to accommodate a plant.

70. (New) A planter according to claim 67, wherein engagement of the spacer member with the upper surface limits downward movement of the spacer, thereby enabling the fingers to be driven down at sides of the spacer member, so that the fingers enter the root portion, converge and grip the root portion.

71. (New) A planter according to claim 67, wherein the spacer member is locatable between a retracted position and an extended

position, and in the extended position, the spacer member is configured such that tips of the fingers are prevented from extending beyond a lower edge of the spacer member.

72. (New) A planter according to claim 67, wherein the planter comprises a plurality of plant extraction device, and the planter further comprises a device for actuating respective fingers of the plant extraction devices to converge substantially simultaneously.

73. (New) A planter according to claim 54, wherein the planter comprises a spacer for setting a spacing of the at least one extraction device in accordance with propagation trays.

74. (New) A planter according to claim 54, wherein the planter comprises a plurality of plant extraction devices arranged in a row, whereby a row of plants can be pulled out of a propagation tray simultaneously.

75. (New) A planter according to claim 74, wherein the planter comprises an arrangement for adjusting a separation of the plant extraction devices in a row.

76. (New) A planter according to claim 54, wherein the planter is a field planter.

77. (New) A method of automated planting, comprising the steps of:

- a) extracting plants out of a propagation tray by at least one plant extraction device;

- b) receiving the extracted plants from the at least one extraction device by a plant transport; and

- c) receiving the extracted plants from the plant transport to a delivery assembly and delivering the extracted plants to ground by a delivery assembly,

- d) wherein said step of receiving the extracted plants from the at least one extraction device includes the steps of:

- i) receiving the extracted plants onto first and second plant conveyors, and

- ii) controlling the conveyors to hold one conveyor in a static state to receive the plants from said at least one extraction device while driving the second conveyor to present previously deposited plants to the delivery assembly.

78. (New) A method according to claim 77, wherein said step of receiving the extracted plants from the at least one extraction device includes the steps of:

receiving an extracted row of plants by the plant transport from the at least one plant extraction device, and sequentially presenting the extracted plants to the delivery assembly.

79. (New) A method according to claim 77, wherein each conveyor comprises a plurality of holding ports, and further comprising the step of: controlling a position of the holding ports relative to the delivery assembly and advancing the conveyors in response to a sensor, such that the delivery assembly receives extracted plants at a uniform rate.

80. (New) A method according to claim 77, wherein said step of extracting includes the steps of: extracting a row of plants in alignment along a line, and translating the row in a direction perpendicular to that line, the line of plants being deposited in relation to the plant transport.

81. (New) A method according to claim 77, wherein said step of extracting includes the steps of:

providing holding ports to locate and hold the plants; and driving extraction members generally transversely into a root portion of the plants to hold the plants in the holding ports while said at least one extraction device is withdrawn.

82. (New) A method according to claim 77, wherein said step of extracting includes the steps of:

a) arranging spring fingers such that ends of the fingers are biased towards each other,

b) arranging a spacer member between the fingers,

c) engaging the spacer member with an upper surface of a root portion of a plant to allow the fingers to be driven down past sides of the spacer member.

83. (New) A method according to claim 82, wherein said step of extracting further includes the step of providing a stop for limiting movement of the spacer member so as to at least limit compression of a root portion surface by the spacer member.

84. (New) A method according to claim 82, wherein said step of extracting further includes the steps of:

arranging the spacer member in engagement with the upper surface of a root portion of a plant to limit downward movement of the spacer, and

driving down the fingers at sides of the spacer member, so that the fingers enter the root portion, converge and grip a root ball thereof.

85. (New) A method according to claim 82, wherein said step of extracting includes the steps of:

providing a plurality of plant extraction devices, and
actuating respective fingers of the at least one plant extraction device to converge substantially simultaneously.

86. (New) A method according to claim 77, wherein said step of extracting includes the step of spacing the at least one extraction device in accordance with the propagation trays.

87. (New) A method according to claim 77, wherein the planter comprises a plurality of plant extraction devices arranged in a row, and said step of extracting includes the step of pulling out a row of plants out of a propagation tray simultaneously.

88. (New) A method according to claim 87, wherein said step of extracting includes the step of adjusting a separation of the plant extraction devices in a row.

89. (New) A method according to claim 77, wherein the method is a method of automatic field planting.

90. (New) An automatic planter according to claim 54, wherein the planter is a mobile planter.